OVERVIEW

Iowa Trails 2000 sets forth an ambitious statewide trails vision totaling well over 4,000 miles. The design guidelines, implementation strategies, and financing options described in this document help to ensure the quality of each trail on the day it opens. It is equally important to ensure the long-term quality of the statewide trail system. Once a trail is in place, it must be operated and maintained so as to provide a quality recreation or transportation amenity for years to come. The agency or group that constructed the trail, in most cases, has full responsibility for trail operation and maintenance.

OPERATIONS

The operation of a trail consists of the day-to-day management of trail use. This includes law enforcement, marketing, special events, fee collection, map and brochure updates, and other functional considerations. The specific policies regarding the operation of a trail, such as permitted uses and user cost (if any), will most likely be decided in advance of trail construction. After construction, a large part of trail operation consists of the day-to-day execution of those policies.

MAINTENANCE

The maintenance of a trail includes the various activities involved in keeping the trail in a safe, usable condition. This includes numerous efforts ranging from mowing and brush removal to replacement of damaged signs or benches to reconstruction of the trail. Lifetime trail maintenance will place ongoing costs on the operating agency, and this should be considered during the trail planning and funding process.

In most cases, funding granted for trail construction cannot be applied to ongoing operations and maintenance. In order to maintain the quality of a newly constructed trail, local trail operators must plan for the continued maintenance of the facility.

ROLES AND RESPONSIBILITIES

In most cases, the agency or group that constructed the trail will have primary responsibility for its operation and maintenance. Because, however, maintaining the statewide trail system is important to numerous state agencies, local governments, and non-profit organizations, these groups may cooperate together in maintaining the quality of the overall system. Potential partners in maintaining the state trail system and the roles they may play are listed below.

- **LOCAL COMMUNITIES** are the primary operating agents of the trails they implement. They remain close to the trail, both physically and functionally, and are best equipped to market, improve, maintain, and evaluate the trail. They also typically have full ownership of the trail and access to local police, fire, and public works departments, thereby allowing easy policing and maintenance of the trail. Trail owners should provide annual funding for the basic maintenance needs of their trails. The Iowa DOT requires a 20-year maintenance commitment from local trail sponsors seeking funding through DOT programs.

- **METROPOLITAN PLANNING ORGANIZATIONS AND REGIONAL PLANNING AFFILIATIONS** may offer guidance and expertise on trail operation and maintenance.

- **County Conservation Boards** act as primary operating agents of county trails. In this sense, they have the same basic responsibilities as local communities as described above.

- **Iowa DOT** will be involved in the operation and maintenance of trails constructed by the Iowa DOT along highway rights-of-way. For local facilities, the DOT offers technical assistance to local communities.

- **Iowa Department of Natural Resources,** maintains, operates, and improves more than 650 miles of trails within its parks, recreation areas, and forests. The DNR works with local communities to create, operate, and maintain trail links to parks. It is also responsible for improving and expanding the state snowmobile and newly evolving OHV systems. The DNR is also charged with the creation, operation, and maintenance of water recreation access areas.

- **Local non-profit or private organizations** may implement trails through partnerships with local communities. When this is the case, such groups may also take a role in the operation and maintenance of trails. In addition, these groups may be a source of volunteers for trail maintenance. A good example is a snowmobile club, which may maintain and operate trails within its "jurisdiction" with the assistance of municipal or county governments and the Iowa DNR.

RECOMMENDATIONS

These recommendations are meant to assist trail operators in the operation and maintenance of trail facilities. They should be viewed as guidelines. These recommendations come with no legal requirement, and should be altered based on conditions specific to a particular operating entity or trail.

Establish an Operations and Maintenance Policy

Before a trail opens, the implementing group should set forth a policy document outlining specific rules pertaining to the trail and specific tasks that will be performed for its operation and maintenance. This policy will be the guide for the ongoing administration of the trail. The document should be based on public input gathered throughout the trail planning process, and should be unique to the particular community or trail to which it applies. Operations and maintenance policies may be included in subsequent system-wide or mode specific trail plans as described in Chapter 6: Implementing the Vision.

The Operations and Maintenance Policy may cover a wide range of issues. The following items should be major considerations in the policy.

- Permitted uses on the trail.
- Whether user fees will be collected, and in what manner (pay-as-you-go, trail passes, or others).

- Marketing of the trail. Some communities may desire to reap the economic benefits of trails by actively marketing their facilities. The costs associated with marketing can vary greatly, depending on the intended audience and the intensity of the campaign. For further guidance on capturing the economic potential of trails, refer to the *Iowa Trails 2000* handbook "Implementing Trail-Based Economic Development Programs," included at the end of this document.

- Policing and security on the trail. This may include the determination of an emergency response plan; provision for trail patrol through existing law enforcement or with special community bike patrols; or a plan for other safety measures such as emergency phones or call boxes.

- Issues related to crossings of the trail. This may apply to agricultural accesses, new residential driveways, and connections to the trail. It should be determined whether new crossings will be allowed, whether a permitting process will exist, who maintains such crossings, and who assumes responsibility or liability associated with such crossings.

- Liability. In many cases, liability will be determined by existing laws. The operating agency should fully understand the liability associated with the trail and verify that insurance is adequate.

- Encroachment. Some local agencies may take ownership of a corridor that is being encroached upon by adjacent landowners. This is particularly true of railroad corridors bounded by agricultural uses. The implementing agency should set forth definitive policies relating to existing and future encroachments.

- Snow removal. In mild winters, some users will expect hard-surfaced trails to be plowed for use throughout the season. The operating agency should determine whether or not it will take on this maintenance.

- Seasonal maintenance. Some trails must be groomed in winter to provide for adequate use, namely snowmobile and cross-country ski trails. The operating agency should determine who will perform this maintenance. In many cases, volunteers or existing clubs can groom trails.

- Cooperative maintenance agreements. In some cases, trail owners may wish to explore the possibility of partnering with other government entities or private organizations in the operation and maintenance of a trail. Any operations or maintenance agreements should be articulated in the operations and maintenance policy.

- Use of volunteers. Volunteers can be a cost-saving benefit for trail operators. They do, however, need to be supervised, and liability prevents their use in certain situations.

- Evaluation of trail condition. Every trail should be evaluated on a regular schedule to identify the need for major and minor repairs. The operations and maintenance policy should delineate how often trail evaluations take place, preferably once per year.

- Short- and long-term maintenance program. See below.

——*Recommended Maintenance*

Different types of trails will differ greatly in their maintenance requirements. All trails, however, will require a variety of maintenance activities at different points in their lives. Table 7-1 outlines some general guidelines for maintenance activities and the frequency at which they should be performed. This matrix is a guide only, and the trail operator will know best when certain maintenance activities should be performed.

- "Frequency" refers to how often each maintenance item should be performed.

- "Maintenance" refers to the specific maintenance activity to be performed.

- "Performed by" refers to who may undertake the particular maintenance activity.

As discussed below, different trail types have different maintenance requirements. The following matrix takes a general approach to all trails and their periodic maintenance requirements. The listing below describes some maintenance activities specific to certain trail types.

Asphalt trails can be expected to hold up well under most conditions. They are susceptible, however, to freeze/thaw conditions and particular care should be taken to fix holes and cracks. Left without repair, holes and cracks in asphalt pavement get larger, eventually causing safety hazards. During the yearly evaluation, preferably in spring, special attention should be given to marking and repairing breaks in the surface.

TABLE 7-1 RECOMMENDED MAINTENANCE

Frequency	Maintenance	Performed by
As needed	Tree/brush clearing and mowing	Volunteers, trail operator
	Sign replacement	
	Map/signage updates	
	Trash removal/litter clean-up	
	Replace/repair trail support amenities (parking lots, benches, restrooms, etc.)	
	Repair flood damage: silt clean-up, culvert clean-out, etc.	
	Patching/minor regrading/concrete panel replacement	
Seasonal	Snow grooming	Volunteers, trail operator
	Snow plowing	
	Planting/pruning/beautification	
	Culvert clean-out	
	Installation/removal of seasonal signage	
Yearly	Surface evaluation to determine need for patching/regrading	Trail operator
	Evaluate support services to determine need for repair/replacement	
5-year	Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary	Volunteers, trail operator
	Sealcoat asphalt trails	
10-year	Resurface/regrade/restripe trail	Hired contractor, trail operator, volunteers
20-year	Replace/reconstruct trail	Hired contractor, trail operator, volunteers

Granular trails are less susceptible to freeze/thaw conditions, but may be severely impacted by runoff. After floods, heavy rains, or the spring snow melt, the trail surface may become rutted. If left alone, subsequent floods or rains will follow the same ruts, making them larger and more hazardous. The surface of granular trails should be periodically raked back into place to maintain a smooth surface for trail users.

Natural surface trails will also be affected by runoff. Such a trail, whether used by hikers, equestrians, OHVs, or motorcycles, should be properly designed to minimize erosion, but periodic repair will need to be performed. If culverts of any kind are used, they may need to be "re-embedded," since repeated runoff can undermine them. In addition, any rutting of the trail, as described above, should be filled in with soil and compacted. For natural surface trails that are used by motorized vehicles, the wheels of the vehicles themselves can cause rutting. As necessary, the trail should be re-leveled with compacted soil to prevent the ruts from becoming too deep.

Snowmobile/ski trails, if they exist on the same treadway as other trail modes, will benefit from routine maintenance associated with those summer trails. If they exist in independent corridors, which is often the case for snowmobile trails, they will be primarily affected by debris, including trees, brush, or rocks, that find their way into the corridor. Aside from the grooming of the snow itself, snow-based trails should be cleared of debris that may be a hazard after snowfall. Mowing and removal of brush in late fall can increase usability of the trail. An evaluation of trail corridors in the fall can prevent problems later on. Another major operation and maintenance consideration regarding snowmobile trails is the installation, removal, and repair of seasonal trail signage.

CONCRETE TRAILS, though primarily used in urban environments for pedestrian-only (sidewalk) facilities, have periodic maintenance requirements, as well. Concrete is bound to crack in places that were not anticipated. In most cases, these small cracks will not be a serious problem if a quality sub-base was prepared. If cracks become severe, affected panels should be replaced. Concrete walks should be evaluated for cracks (or differences in settlement between panels) that might prove a hazard for children, the elderly, persons in wheelchairs, and other persons with less than average mobility.

MAINTENANCE COST

Maintenance costs will vary greatly depending on the type of trail, amount of volunteer labor use, available services, and geographic location of the trail. These costs, however, must be considered during the trail planning process, to ensure that trail owners can pay for the ongoing maintenance of the trails they develop.

Maintenance costs are rarely broken down into specific tasks such as those listed in Table 7-1. Most trails will be maintained by an existing agency, such as a local or state park, public works, or maintenance department. Estimated costs, therefore, are broken down by the type of maintenance performed. There are three basic types of maintenance:

- ROUTINE MAINTENANCE includes all the general activities - such as brush clearing, trash collection, and sweeping – that may take place on a regular basis throughout a season.

- MINOR REPAIRS refer to activities that can be expected every five years or so, such as amenity replacement, trail sealcoating, repainting, or restriping.

- MAJOR RECONSTRUCTION refers to significant expenditures involving resurfacing or reconstruction. These activities are the most costly trail maintenance activities and should be planned for in advance.

——*ROUTINE MAINTENANCE*

Most of the routine maintenance of a trail facility will be performed by an existing agency or a volunteer group. Local trail owners should be well equipped to include trail maintenance into their parks or public works maintenance budgets and activities. Activities that should be considered as routine maintenance include:

- Yearly facility evaluation to determine the need for minor repairs (see page 7-12)
- Tree/brush clearing
- Mowing
- Map/signage updates
- Trash removal/litter clean-up
- Repair flood damage: silt clean-up, culvert clean-out, etc.
- Patching, minor regrading, or concrete panel replacement
- Snow grooming and/or plowing for winter-use trails
- Planting, pruning, and general beautification
- Installation and removal of seasonal signage

The yearly cost for routine maintenance depends on the maintenance capabilities already in place by the trail owner and the amount of volunteer labor used. In general, yearly routine maintenance costs can be estimated at $1,500 per mile. This figure assumes a single season trail, and may increase if a trail is groomed or plowed for

winter use. This cost is estimated in year 2000 dollars, and will be affected by inflation. For a discussion on inflation, see Chapter 5: Cost Analysis.

——*Minor Repairs*

The need for minor repairs should be determined by a yearly facility evaluation (see routine maintenance above). Minor repairs may include the following activities:

- Replacement, repair, or repainting of trail support amenities, such as restrooms, signage, benches, trash receptacles, or hitching posts
- Replacement of a portion of the trail
- Restriping of trails
- Sealcoating of asphalt trails

The cost for replacement, repair, or repainting of trail amenities is based on the initial cost of those amenities. Trail operators should maintain records of the general costs of trail amenities as a means of estimating future repair and replacement costs. If custom elements, such as lighting, decorative railings, or benches, are used in trail design, the trail owner should consider ordering extra elements at the time of construction and storing them for future use, thereby defraying the cost of single-runs later.

Replacement of a portion of a trail may be necessary if severe flooding, continual erosion, or weak soils cause periodic difficulties with trail maintenance. For estimated costs for new trail construction, see Chapter 5: Cost Analysis.

Restriping of trails will cost the same (in year 2000 dollars) as the original striping. The trail owner should keep a record of the original bid to determine the price of restriping a trail using contracted labor. In many cases, it is cost effective to perform restriping along with other trail or highway maintenance. In such instances, the trail owner itself will be the best source of costing information.

Sealcoating of asphalt trails should take place approximately every five years. This will increase the longevity of the trail and provide a quality riding surface. When performed, sealcoating will cost approximately $3,500 per mile for a 6-foot pedestrian trail and approximately $5,800 per mile for a 10-foot multi-use trail. A periodic cost such as this should be included in the trail owner's Capital Improvement Program, in order to ensure that adequate funding is available.

——*Major Reconstruction*

There are essentially two activities that are considered to be major reconstructions:

- Resurfacing of asphalt trails
- Complete replacement, regrading, and resurfacing of all trails

Asphalt trails will need to be resurfaced approximately every 10 years, depending on how well they have been maintained. A resurfacing typically involves placing an asphalt overlay on an existing asphalt surface in order to erase cracks and bumps. It is not a perfect solution, as weak underlying soils or tree root penetration will eventually affect this top layer, but it does offer a lower cost means of

extending a trail's life. The cost for resurfacing can be based on unit costs shown on Chapter 5: Cost Analysis. Asphalt surfacing costs approximately $1 per square foot for a 4-inch depth. Asphalt overlays should have a depth of 1 to 2 inches. Table 7-2 offers some sample costs for asphalt resurfacing.

TABLE 7-2 ASPHALT RESURFACING COSTS

Trail Type	1-inch overlay	2-inch overlay
6-foot pedestrian trail	$7,920 per mile	$15,840 per mile
10-foot multi-use trail	$13,200 per mile	$26,400 per mile

Complete replacement of a trail involves removing the existing trail, regrading the trail base, and resurfacing the facility. This kind of comprehensive maintenance will be necessary approximately every 20 years, regardless of trail type. Even natural surface trails may need to be fully regraded after 20 years of use. Trail costs for reconstructions are the same (in year 2000 dollars) as the cost of a new trail plus the cost of demolishing the existing trail. Cost estimates included in Chapter 5: Cost Analysis give a general overview of replacement costs and allow trail owners to make a preliminary estimate. As with any major trail project, however, a detailed cost estimate should be performed during the project planning stages. The best guide for estimating the replacement cost of a trail is to consider the original construction cost.

A major cost such as trail replacement should be considered well in advance. It may be more difficult to secure large state or federal grants for trail reconstruction. Therefore, a trail owner should consider the eventual cost of trail replacement and work to "save up" for that significant maintenance activity.

FINANCING

Much of the funding that is available for trail implementation cannot be used for ongoing trail maintenance. Table 7-3 lists a variety of sources for trail maintenance funding. It includes both existing programs and innovative ideas that have been employed elsewhere.

TABLE 7-3 FUNDING FOR TRAIL MAINTENANCE

Program Name	Type of Funding	Contact Information	Brief Description
Snowmobile Grants	Grant	Iowa Department of Natural Resources Tony Tiogo Parks, Recreation & Preserves Division 502 East 9th Street Des Moines, IA 50319 (515) 281-6101 www.state.ia.us/government/dnr	The DNR Snowmobile Trail grants offer funding for the development of riding areas, trail maintenance, equipment purchases, trail groomers, insurance, and land acquisition.
ATV Trail Grants	Grant	Iowa Department of Natural Resources Tony Tiogo Parks, Recreation & Preserves Division 502 East 9th Street Des Moines, IA 50319 (515) 281-6101 www.state.ia.us/government/dnr	The DNR ATV Trail grants offer funding for the development of public riding areas, trail maintenance, equipment purchases, trail groomers, insurance, and land acquisition.
Americorps	Matching Grant	Americorps, www.cns.gov/americorps OR Iowa Department of Natural Resources Mark Edwards Parks, Recreation & Preserves Division Wallace State Office Building Des Moines, IA 50319 (515) 281-8959 www.state.ia.us/government/dnr	Americorps is a national volunteer program in which agencies, communities, or non-profit groups can sponsor personnel to assist in a variety of activities. Funds must be used to operate or plan community service programs. Programs could include trail building, environmental education and community restoration work.

TABLE 7-3 FUNDING FOR TRAIL MAINTENANCE

Program Name	Type of Funding	Contact Information	Brief Description
Challenge Cost Share Program	Grant	National Park Service ww2.cr.nps.gov/ccs_p.htm	The Challenge Cost Share Program funds any partnership which benefits National Park Service projects or programs. This may include historic and archaeological site restoration, resource management, resource inventory and monitoring, scientific research, trail maintenance, interpretive videos for environmental or heritage education programs, interpretive exhibit enhancement or summer youth employment for recreation activities.
Local Funding Mechanisms	General Funds		Trails may be developed, managed, and maintained using local funds. There are numerous ways such funds can be dedicated for trail use. Bond referenda, assessments, special financing districts, park/trail dedication, or general fund money may be used at a local government's discretion. Often, this money is used as the local match for other federal or state trail grants.
Memorial Miles Program	Donations	Poudre River Corridor (970) 350-9783 OR Hospice of Northern Colorado (970) 352-8487	The Memorial Miles Program links the Weld County community in fundraising efforts for the Poudre River Trail. Individuals can give a gift of trees, benches, sculpture, wildflowers, bridges, "watchable wildlife" facilities, corridor maintenance and corridor improvements.
Wheel Pass	User Fees	Cannon Valley Trail Office Cannon Falls City Hall 306 West Mill Street Cannon Falls, MN 55009 (507) 263-3954	Visitors age 18 and older must have a valid "Wheel Pass" when using wheeled, recreational devices such as bicycles, in-line skates, and skateboards from April 1 - November 1. Funds are used for trail maintenance and upgrades.